FLORIDA POLYTECHNIC UNIVERSITY

Deep Dive into Design Thinking

Lecture 2 – Capstone

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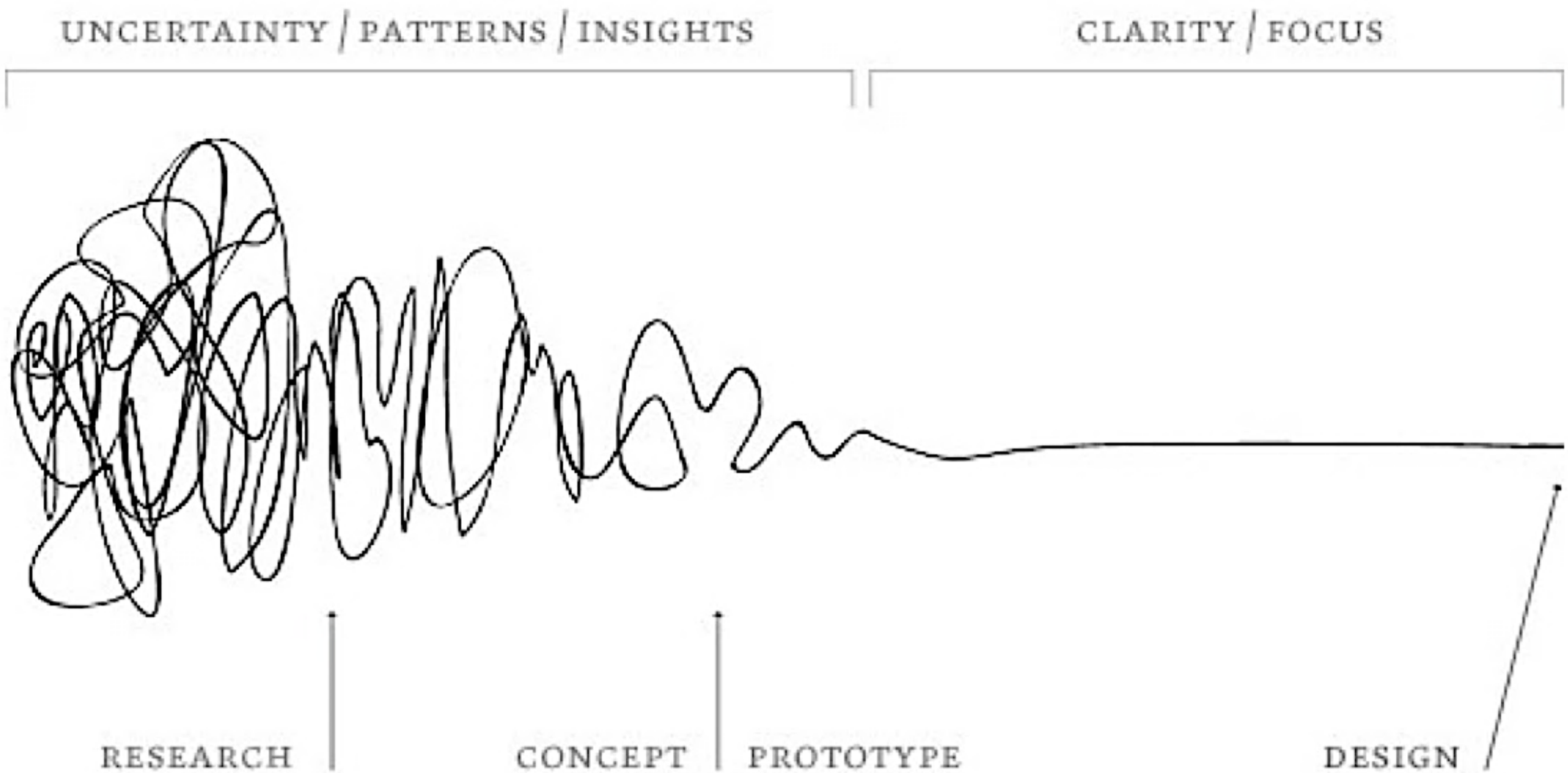
Design Squiggle

Clarity Over Time



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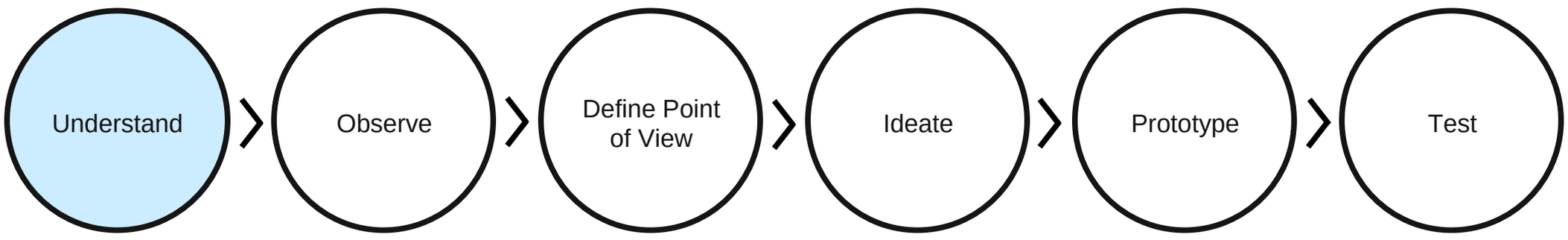
Stage 1: Understand

Who, What, When, Where, Why, How?

- In addition to a problem statement, it is critical to understand the context of your design problem. The following questions are useful when trying to **understand** your problem:
  - **Who** is the target group (size, type, characteristics)?
  - **What** does the user propose as a solution?
  - **When** and for how long is the result needed (product life cycle)?
  - **Where** is the result going to be used (environment, media, country)?
  - **Why** does the user think they need a solution?
  - **How** is the solution implemented (skills, budget, business model)?



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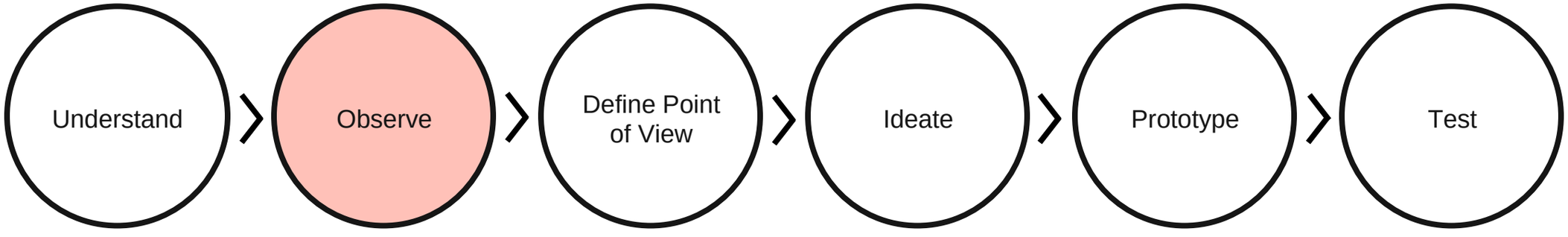
Stage 2: Observe

Gather, Empathize, and Investigate

- Going to users in their real environments and/or contexts. We are developing a persona (or personas) for our stakeholders and users.
  - **Users:** the people or entities who will directly interact with or be affected by the product, service, or solution being designed.
  - **User Categories:**

1. **End Users:** The individuals who will directly use the product or service.
2. **Secondary Users:** Those who may interact with the product indirectly or occasionally.
3. **Stakeholders:** Individuals or groups who have a vested interest in the design's outcome but may not use the product directly (e.g., business owners, regulators).



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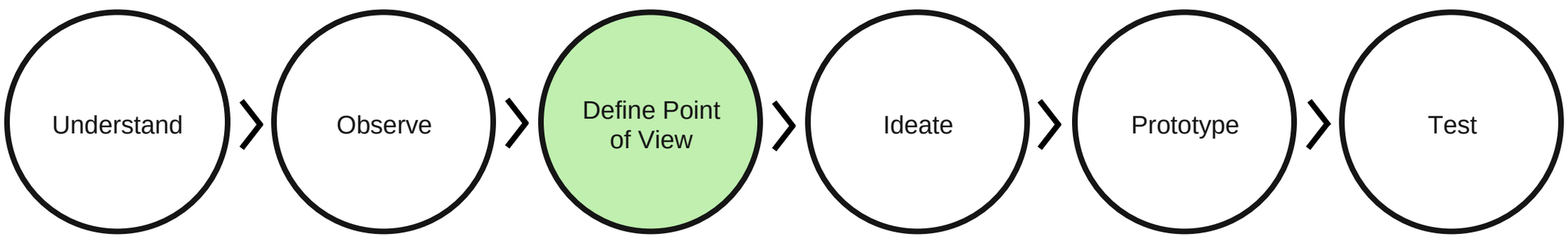
Stage 3: Define Point of View

Evaluation, Interpretation, Weighting

- From our findings in Stage 1: Understand and Stage 2: Observe, we synthesize “points of views” for the various users and stakeholders invested in the design problem.
  - **Example PoV Synthesis:**

    1. Name of the user/persona (who?): _____
    2. Needs (what?): _____
    3. In order for (how?): _____
    4. Because (why?): _____



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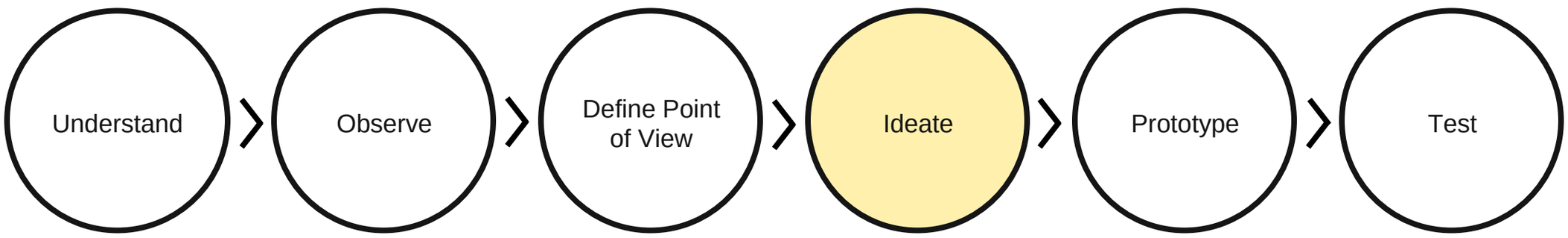
Stage 4: Ideate

Ideation, Concept Generation, Brainstorming

- Using our generated Points of Views, we can start to make strides towards solutions to the design problem.
  - **Divergent Thinking:** Encourage creative, out-of-the-box ideas without judgment or immediate evaluation.
  - **Collaboration:** Engage in group brainstorming sessions to leverage diverse perspectives.
  - **Iteration:** Refine and evolve ideas through continuous feedback and testing. Idea generation by inherently involves building on ideas while incorporating new and disruptive information.
  - **Analogous Thinking:** Draw inspiration from solutions in unrelated fields to generate new ideas for your problem.



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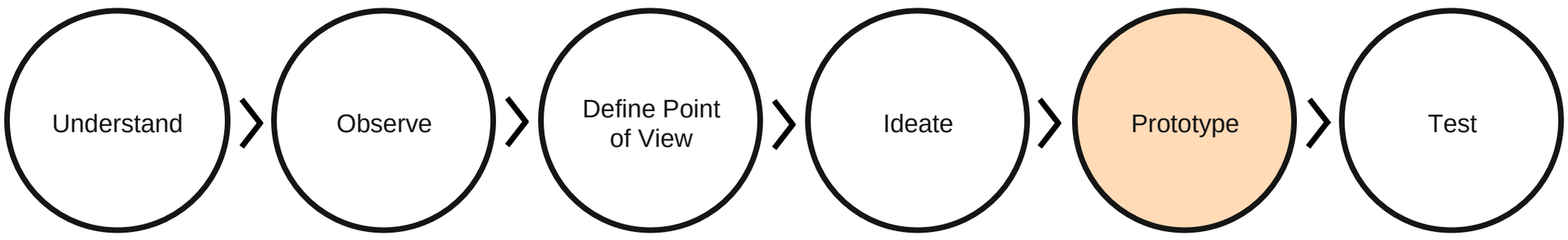
Stage 5: Prototype

Exploring the Solution Space

- Prototypes help us communicate about and learn from generated ideas. Specifically, we can communicate internally or externally and learn to affirm a belief or reflect on uncertainties.
  - **Strategies:** Low vs. High Fidelity, Form vs. Function, Physical vs. Digital
  - **Approaches:** Iterative, Parallel, Hybrid, Oneshot
  - **Cost & Time:** Prototyping early with low-cost materials, then building to higher cost (and higher fidelity) materials can help save time and money overall.
  - **Production:** Additive Manufacturing, Craft Materials, Digital Mockups, Wireframes, Simulations
  - **User Feedback:** Prototypes enable us to gather feedback from stakeholders and users, which can guide further development and refinement of ideas.



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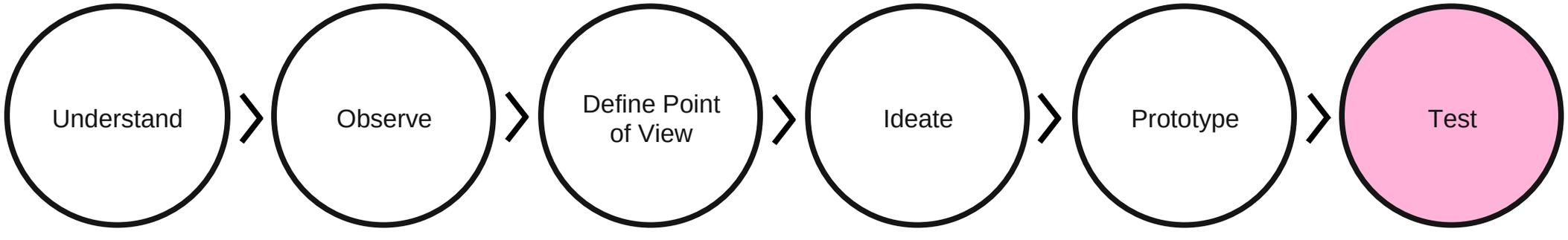
Stage 6: Test

Validation, Verification, Assessment

- Testing should occur for each prototype that is created (physical or virtual). It is important establish a testing plan with measurable metrics to inform the design process.
  - **Appropriate Testing:** A test should fit the context, fidelity, and functionality of a given prototype.
    - **For Example:**
      1. A prototype designed specifically to learn about the viability of a specific function may not be appropriate for evaluating user experience.
      2. On the other hand, a prototype designed to explore form (or user interface) might not be appropriate for testing speed or efficiency.



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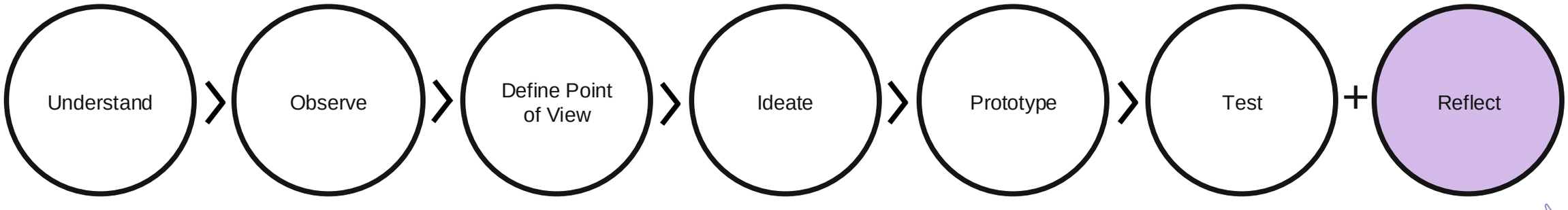
+ Stage 7: Reflect

I Like, I Wish, I Wonder

- There is actually an additional step, Stage 7: Reflect, that should be present at the end of any micro design cycle. Reflection is key to a robust design process.
  - **Reflect on Process:** Was the process used for a micro or macro design process appropriate, fruitful, and efficient?
  - **Reflect on Collaboration:** Was the design team able to work effectively and in harmony given their roles?
  - **Reflect on Stakeholders:** How has the involvement of different stakeholders impacted the outcome of the design process?
  - **Reflect on Outcomes:** Does the final solution meet requirements established at the onset of the design process?



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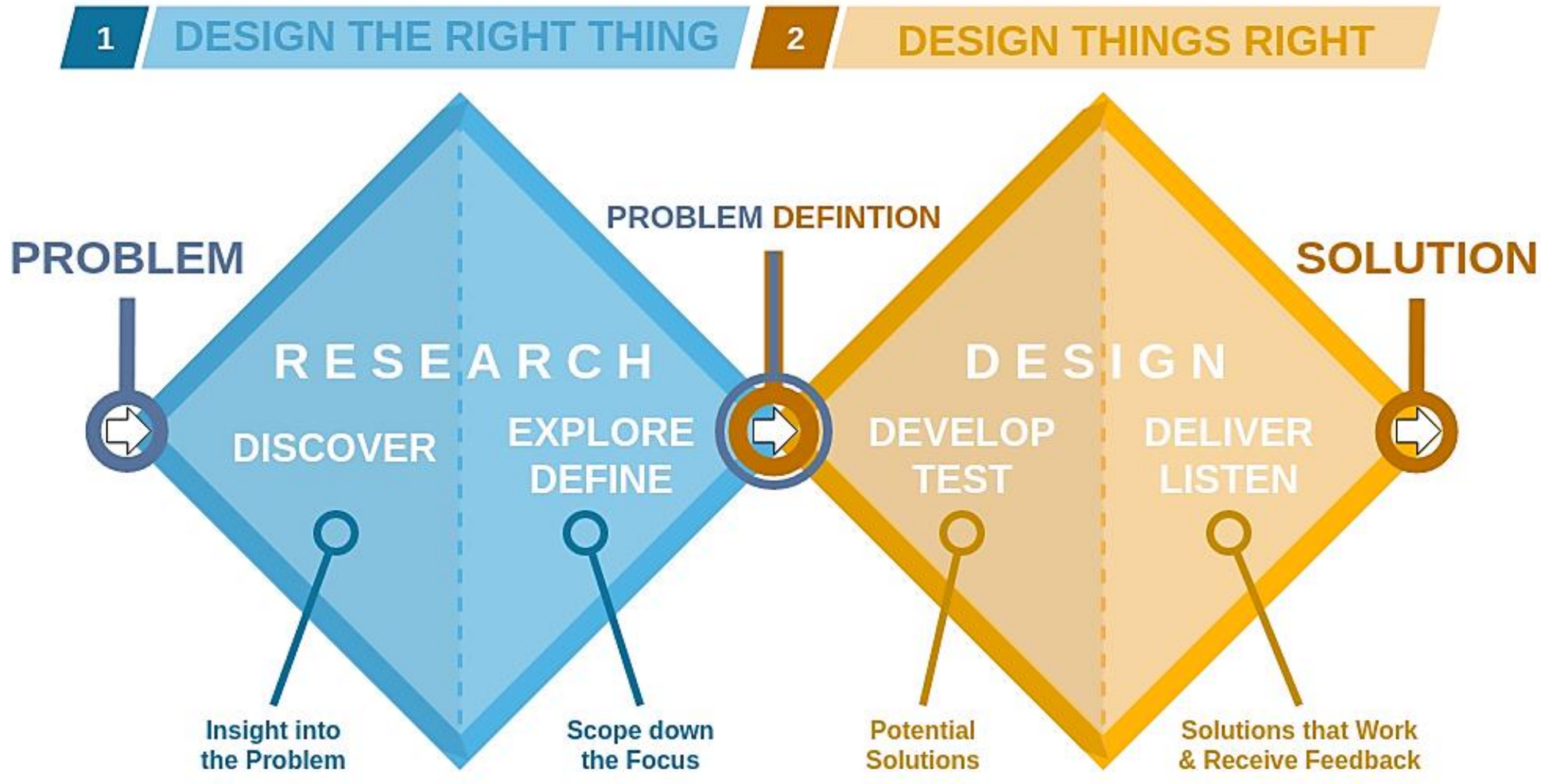
Double Diamond

Stage 2



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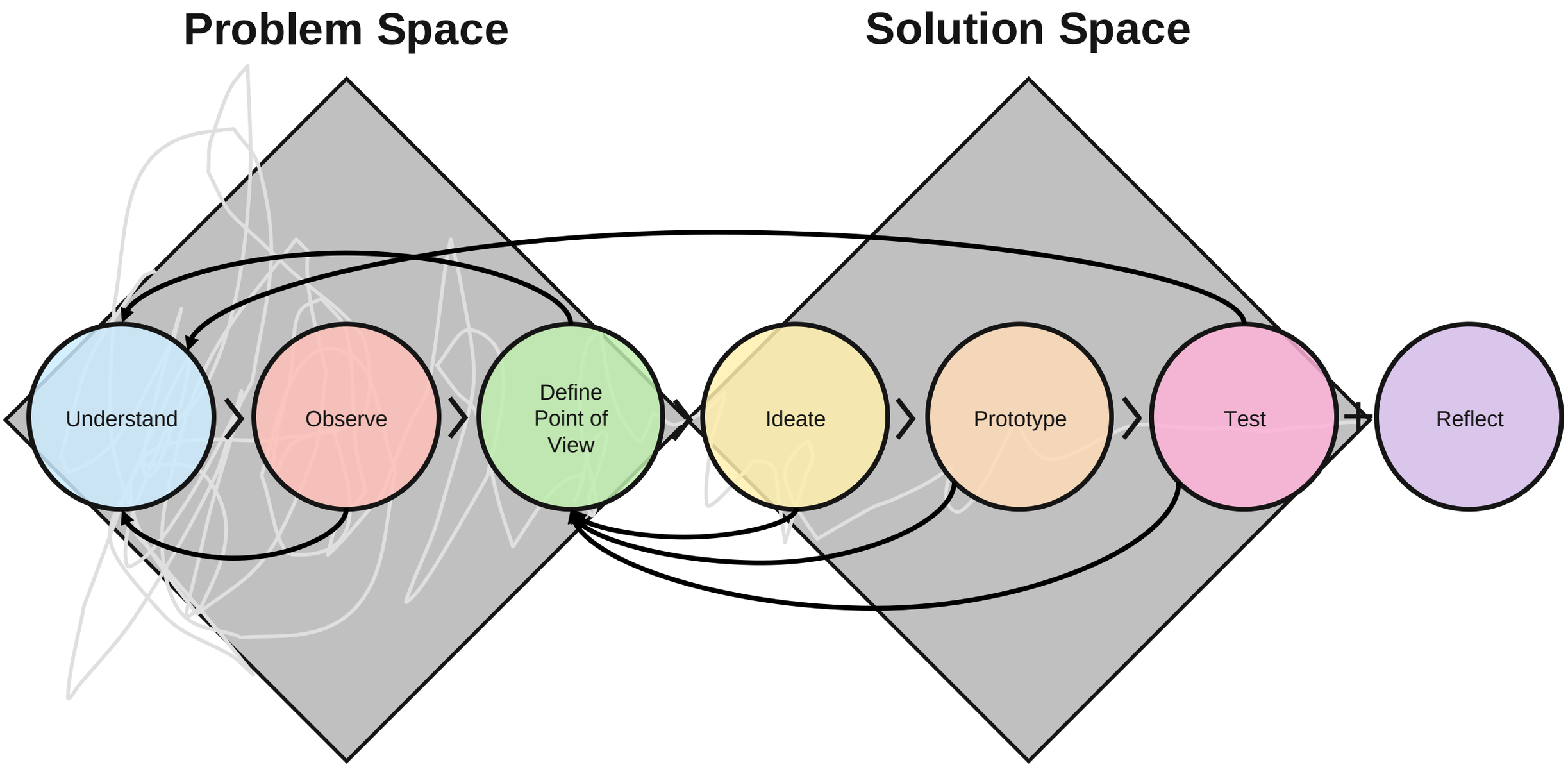
Design Thinking Process

From Problem to Solution



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Design Thinking Process

Designing a Better Study Space

1. Understand (2 minutes):
Think about the Who?, What?, When?, Where?, Why?, and How? of a study space generally.

2. Observe (2 minutes):
Pair up and share observations/experiences about current study spaces or those they've seen.

3. Define Point of View (2 minutes):
As pairs, create a point of view statement based on their observations. Name the user, define their needs, what will they use it for, why do they need it?

4. Ideate (2 minutes):
Brainstorm a few ideas for improving the study space. Wild ideas and analogies are encouraged.

5. Prototype (3 minutes):
Sketch a basic "prototype" to communicate your best ideas. Include key features and how it addresses the user's point of view.

6. Test (2 minutes):
Pairs create a brief test plan. What aspects should be measured to get meaningful feedback (e.g., comfort, functionality)?

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Design Process Reflection

The + Stage 7

7. Reflect (2 minutes): Individually answer the following questions:

1. What was the most challenging part of the process?
2. How did the different stages influence each other?
3. In what ways did reflection throughout the design process help in refining your ideas?

Share your ideas with your classmates?

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Looking Forward in Capstone

Building a Design Thinking Toolbox

- In the next few weeks, we will learn specific **strategies**, **tools**, and **methodologies** to support each stage of the design process.
- This is to build a "**design thinking toolbox**". Your job as a designer is to understand your tools and use them where they best serve the design problem.
- We want to think about how to understand the boundaries of our **problem space**, the limits of our **solution space**, and how we can leverage our undergraduate education through design thinking to **bridge** between the to two.
- In Capstone, we will provide examples and case studies of **successful** and **unsuccessful** design processes so that we can learn from them together.

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References

Questions?

- Lewrick, Michael, Patrick Link, and Larry Leifer. *The design thinking playbook: Mindful digital transformation of teams, products, services, businesses and ecosystems*. John Wiley & Sons, 2018.
- Lewrick, Michael, Patrick Link, and Larry Leifer. *The design thinking toolbox: A guide to mastering the most popular and valuable innovation methods*. John Wiley & Sons, 2020.
- The Double Diamond design process model – Image by Digi-ark (via Wikipedia)
- https://thedesignsquiggle.com

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